Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_

**Lab: Testing Your Responses to Visual and Auditory Stimuli**

Mrs. Krouse, Pre-AP Biology, 2015-2016

**Background:** The brain processes stimuli from the environment through its five senses: sight, taste, touch, sound, and smell.

**Research Question:** Do you respond more quickly to visual or auditory stimuli?

**Materials:** meter stick

**Hypothesis:** If we test our reaction times to visual vs. auditory stimuli, then we will respond faster to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ stimuli (fill in the blank).

**Procedure:**

***Part I: Visual***

1. Obtain a meter stick.

2. Hold a meter stick vertically with the “0 cm” end down and approximately at waist height. (The 100 cm end would be high in the air)

3. Have your partner hold her writing hand with her thumb and forefinger held even with the bottom (0 cm end) of the meter stick with one digit on each side of it as if they were going to squeeze it.

4. Prepare to drop the meter stick.

5. Drop the meter stick and have your partner try to catch it as quickly as she can. Don’t give any verbal warnings of when you will drop it.

6. Record the distance the meter stick fell before your partner grabbed it by looking at the number of the meter stick their fingers grabbed. Enter your data on to the data table.

7. Repeat this procedure until you have recorded three data points with your right hand and three data points with your left hand.

8. Repeat for all the members in your lab group.

***Part II: Auditory***

9. Repeat the procedure above, but this time have the “catcher” close his or her eyes. The dropper indicates when the meter stick is dropped by saying “Now”. It is very important that the dropper says, “Now” exactly when the meter stick is dropped.

10. Record the distance the meter stick fell.

11. Repeat the exercise for the other partners.

**Methods Summary Chart:** Please fill in the chart below with the elements of the experiment.

|  |  |
| --- | --- |
| Independent Variable |  |
| Dependent Variable |  |
| Method for Measuring Changes in the Dependent Variable |  |
| Control Group (if applicable) |  |
| Constants (factors that stay the same between your control group and your experimental groups) |  |

**Data:** Record your measurements in centimeters in the table below.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Trials** | **Visual Stimulus** | | | | **Auditory Stimulus** | | | |
| Person 1 | Person 2 | Person 3 | Person 4 | Person 1 | Person 2 | Person 3 | Person 4 |
| 1 (Right) |  |  |  |  |  |  |  |  |
| 2 (Right) |  |  |  |  |  |  |  |  |
| 3 (Right) |  |  |  |  |  |  |  |  |
| 1 (Left) |  |  |  |  |  |  |  |  |
| 2 (Left) |  |  |  |  |  |  |  |  |
| 3 (Left) |  |  |  |  |  |  |  |  |
| Average (For Each Person) |  |  |  |  |  |  |  |  |
| Group Average |  | | | |  | | | |
| Class Average (Ms. OK will give you this) |  | | | |  | | | |

**Graphs:** Create a bar graph in the space below, making sure to include all elements of a proper scientific graph (appropriate title, axis labels with units, proper axis scales, etc.) Your graph should show one set of bars for your group average measurements for the visual stimulus and the auditory stimulus. Your graph should show a second set of bars for your class average measurements for the visual stimulus and the auditory stimulus. You should create a key/legend to distinguish between your two sets of bars.



**Discussion / Conclusion Paragraph:** In the space below, you will write a discussion / conclusion paragraph (5-7 sentences) that includes the following:

1) A conclusion statement. Your conclusion statement should indicate whether your data supports or refutes your original hypotheses. You should restate your hypothesis as well.

Ex: My data supports my original hypothesis, which was “If \_\_\_\_, then \_\_\_\_.”

2) A summary of relevant data from your chart / graphs that supports your conclusion statement. You must discuss specific numerical values from the class average measurements only.

3) An explanation of HOW the data you chose to summarize supports your conclusion statement.

Your discussion / conclusion paragraph will be evaluated using the following rubric…

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **You Got It!** | **You’re Almost There!** | **You Need to Make Some Changes!** | **Your Score** |
| Conclusion Statement | The conclusion statement is correct and clearly stated.  *(2 points)* | The conclusion statement is not correct OR is not clearly stated.  *(1 point)* | The conclusion statement is not correct AND is not clearly stated.  *(0 points)* | /2 |
| Data Summary | Any numerical data and trends relevant to the conclusion are clearly identified.  *(1 point)* |  | Numerical data and trends are not identified.  *(0 points)* | /1 |
| Analysis | There is a thorough and accurate explanation of how the data supports the conclusion.  *(3 points)* | There is an explanation but it lacks the necessary detail to fully describe the connection between the data and the conclusion.  *(2 points)* | The explanation is not correct or is very lacking in detail.  *(1 point)* | /3 |

**Total Score: \_\_\_\_\_ / 6**